

SPATIAL ANALYSIS OF MUSASHINO TERRACE IN EARLY MEIJI ERA USING RAPID SURVEY MAPS

~ CASE STUDY OF ITSUKAICHI ROAD~

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1. INTRODUCTION

The first cultivation in Musashino terrace was carried out in the early Edo era. The land uses were intentionally designed as firstly village, secondly farmland and thirdly forests were allocated in order of the distance from roads or waterways to enable farmers to supply their needs by applying compost from forests to their farmlands. Kikuchi (1956) proved that productivity improvement near the suburbs of Edo was caused by the increase application of manure discharged from the city. Kumazawa (1985) pointed out the relationship between the regions where manure was applied with the regional "Ryo" commune system. However, there are no public records of the accurate boundaries of the territories or its land-use changes over time. It would be important to detect these facts quantitatively because their life at that time could be clarified to some extent and the actual history could be verified by them. By creating GIS data sets with the rapid survey old maps named *Jinsokusokuzu*, this paper investigates the spatial structures of the land uses which covers areas of Itukaichi road and surrounding areas in Musashino terrace and estimate the factors of formation of land uses.

2. METHODOLOGY

Using the original photo data sets of *Jinsokusokuzu* provided by the National Institute for Agro-Environmental Sciences, points with attributes of the land use classification were created by every 100m (36,361pt) to create digital land-use maps on GIS system. For the first analysis, the land use changes were analyzed based on the distance from the center path within multiple ring buffers per 100m up to 1km from the center line of Itsukaichi road. In the second analysis, we determined the "Ryo" commune territory of Nogata (which existed in western Tokyo) as the area of manure use and then, based on the two historical records, "*Shinpen Musashi Fudokikou*", and "*Kyudaka Kyuryou Tyou*", the border line of Nogata area was extracted by referencing names of old villages and its current municipality. Using them, the ratio of each land use classification of the Nogata area and non-Nogata area within 1km from Itukaich road was compared.

3. CONCLUSION

In the results of first analysis, it is clarified that the land-use patterns near Itsukaichi road had a three-layer structure from village, farmland to forests in order of distance from the road. The zoning in Edo era would affect land use distribution in entire areas of the study area. The results of second analysis revealed that the land use ratio of [farmland + mulberry-tea] / forest was 3.69 in Nogata, while 2.35 in the area outside of Nogata. Furthermore, the ratio of [mulberry-tea] in the area outside of Nogata was 1.03 % of the total territory (25pt) while 10.45% (383pt) in Nogata. Accordingly, it is apparent that the forest area ratio in the area outside of Nogata was higher than in Nogata which inferred that the larger forest areas were required in order to compensate the shortage of manure in the area outside of Nogata. Also the fact of high percentage of [mulberry-tea] ratio in the area outside of Nogata indicates that "Ryou" system had influenced to the selection of products within the region.

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